

**Solución.**

**a)**

$$\eta = \frac{W}{Q_2} = \frac{Q_2 - Q_1}{Q_2} \implies Q_1 = Q_2 - \eta \cdot Q_2 = 900 - 0,4 \cdot 900 = 540J$$

**b)**

$$\eta = \frac{Q_2 - Q_1}{Q_2} = 1 - \frac{T_1}{T_2} \implies T_1 = T_2 - \eta \cdot T_2 = 450 - 0,4 \cdot 450 = 270K = -3^\circ C$$